

CLASSIFICATION [redacted]

CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

REPORT NO. SO DB-27143

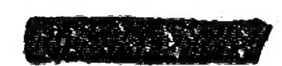
CD NO.

COUNTRY Chile/Germany

SUBJECT German Scientist's Article on "Flying Discs"

DATE DISTR. 31 July 1950

NO. OF PAGES 1



PLACE ACQUIRED [redacted]



NO. OF ENCLS. (LISTED BELOW) 1 [redacted]

DATE OF INFO. Prior to mid-1950

SUPPLEMENT TO REPORT NO.



[redacted]

* Documentary

THIS IS UNEVALUATED INFORMATION

SOURCE

Attached for your information is a copy, in translation, of an article submitted by Dr. Eduard Ludwig for publication in Condor, a German language magazine published in Chile. The article is entitled "The Mystery of the 'Flying Discs,' a contribution to its possible explanation".

[redacted]

Good report but poor translation

The significant conclusion drawn by the scientist in this report is that the old handicap of "boundary layer" on a moving object or

PLACE ACQUIRED [redacted]

NO. OF ENCLS. (LISTED BELOW) 1 [redacted]

DATE OF INFO. Prior to mid-1950

SUPPLEMENT TO REPORT NO.



[redacted]

* Documentary

THIS IS UNEVALUATED INFORMATION

SOURCE

Attached for your information is a copy, in translation, of an article submitted by Dr. Eduard Ludwig for publication in Condor, a German language magazine published in Chile. The article is entitled "The Mystery of the 'Flying Discs,' a contribution to its possible explanation".

[redacted]

Good report but lousy translation

The significant conclusion drawn by the scientist in this report is that the old handicap of "boundary layer" on a moving object or airfoil has been exploited to produce an advantageous reaction and is the factor controlling the success of the "flying saucer" type of airfoil.

[redacted]

CLASSIFICATION [redacted]

						DISTRIBUTION
STATE		NAVY	X	NSRB		
ARMY	X	AIR	X	FBI		

D- #1

6 Nov 78



THE MYSTERY OF THE "FLYING DISCS"

A contribution to its possible explanation.

By Dr. Eduard Ludwig, Santiago, Chile.
Av. Cristobal Colon 1916

Though the continuously reappearing reports on the appearance of new, mysterious aircraft of unknown construction should be considered with severe skepticism as the result of a sort of mass-hypnosis, nevertheless some of the detailed and coinciding accounts of technically trained observers deserve attention and permit one to draw conclusions as to the probable classification of these new aircraft.

Since so far the observations have been made mainly in the dark, which means that only the luminous parts of the craft are visible, every report brings the description of shining discs or circles. If one should discard the absurd conjecture that these aircraft originate from beyond this earth, then it is easy to arrive at the conclusion that the shining circles bear a relation to the exhaust of a rotary gas-turbine. The possibility exists that the rotor of a turbine is used at the same time as a stabilizing top and is therefore fixed vertically to the level of the other turbine rings, which in the darkness produces the effect of the "rings of Saturn".

These observations remind me of a completely new type of aircraft which was developed during the years I worked in the research plant of Professor Junkers in Dessau, which was attached to the airplane factories known all over the world. I do not know how many of my co-workers are still alive today, but I do know that Dr. Bock, Professor at the Technical High School of Berlin, and who was at that time my chief and friend of many years, has been deported to the Soviet Union.

The name of Professor Bock was never widely known due to his modest character, but he may have been the greatest genius of German airplane theoretics, and later, in view of his extraordinary faculties, he was named head constructor of the Ministry of German Airways and Director of the German Institute of Airways Research in Berlin-Adlershof.

In order to explain to a wider circle of readers the basic idea of the new aircraft, I should like to submit first the following explanations:

(really should be translated as physicist - [redacted]

The first [physician] and mathematician who considered the new Science of Aerodynamics after the commencement of purely experimental developments of aircraft construction was the Russian Professor Jukovski of Moscow. Before the first World War and together with my esteemed teacher, Dr. Kutta from the Technical High School of Stuttgart, Germany, he developed the theory of airplane-wingbeam. Professor Kutta succeeded in establishing the famous "Differential equation of the [boundary stratum] which for the first time throws light on the processes in current particles and which in any case explains for the first time theoretically the reason why a planewing can bear a load while moving forward through the air. Since then the "Kutta-Jukovski Theory of Airplane-wingbeam" has been the foundation of all aerodynamics. As already mentioned, the core of this work is the so-called "boundary ~~stratum~~ layer", which consists of the thin layer of air in which the transition of Velocity Zero to the Velocity of the Moving Object takes place. If the object is streamlined then the boundary stratum will endeavor not to sever, no whirlwinds will occur, and therefore no loss of energy will take place in that stratum. Since nature always functions most economically, it always tries to avoid loss of energy, and therefore a planewing would rather bear weight than cause a disruption of the

Though the continuously reappearing reports on the appearance of new, mysterious aircraft of unknown construction should be considered with severe skepticism as the result of a sort of mass-hypnosis, nevertheless some of the detailed and coinciding accounts of technically trained observers deserve attention and permit one to draw conclusions as to the probable classification of these new aircraft.

Since so far the observations have been made mainly in the dark, which means that only the luminous parts of the craft are visible, every report brings the description of shining discs or circles. If one should discard the absurd conjecture that these aircraft originate from beyond this earth, then it is easy to arrive at the conclusion that the shining circles bear a relation to the exhaust of a rotary gas-turbine. The possibility exists that the rotor of a turbine is used at the same time as a stabilizing top and is therefore fixed vertically to the level of the other turbine rings, which in the darkness produces the effect of the "rings of Saturn".

These observations remind me of a completely new type of aircraft which was developed during the years I worked in the research plant of Professor Junkers in Dessau, which was attached to the airplane factories known all over the world. I do not know how many of my co-workers are still alive today, but I do know that Dr. Bock, Professor at the Technical High School of Berlin, and who was at that time my chief and friend of many years, has been deported to the Soviet Union.

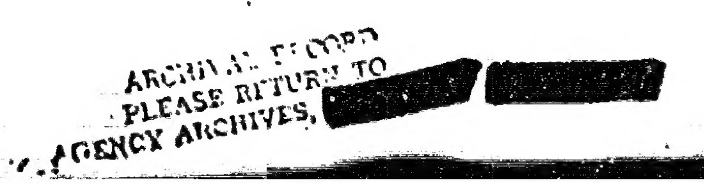
The name of Professor Bock was never widely known due to his modest character, but he may have been the greatest genius of German airplane theoretics, and later, in view of his extraordinary faculties, he was named head constructor of the Ministry of German Airways and Director of the German Institute of Airways Research in Berlin-Adlershof.

In order to explain to a wider circle of readers the basic idea of the new aircraft, I should like to submit first the following explanations:

should be translated as physicist - [redacted]

The first [physician] and mathematician who considered the new Science of Aerodynamics after the commencement of purely experimental developments of aircraft construction was the Russian Professor Jukovski of Moscow. Before the first World War and together with my esteemed teacher, Dr. Kutta from the Technical High School of Stuttgart, Germany, he developed the theory of airplane-wingbeam. Professor Kutta succeeded in establishing the famous "Differential equation of the boundary stratum" which for the first time throws light on the processes in current particles and which in any case explains for the first time theoretically the reason why a planewing can bear a load while moving forward through the air. Since then the "Kutta-Jukowski Theory of Airplane-wingbeam" has been the foundation of all aerodynamics. As already mentioned, the core of this work is the so-called "boundary ~~stratum~~" layer, which consists of the thin layer of air in which the transition of Velocity Zero to the Velocity of the Moving Object takes place. If the object is streamlined then the boundary stratum will endeavor not to sever, no whirlwinds will occur, and therefore no loss of energy will take place in that stratum. Since nature always functions most economically, it always tries to avoid loss of energy, and therefore a planewing would rather bear weight than cause a disruption of the course of the current and let the wing drop.

The logical conclusions based on these theoretic discoveries were obvious: already in the year 1915 Professor H. C. Bauman, also from the Technical High School of Stuttgart, received a patent on the "Splitwing" through which the artificial interruption of the course of the current, the tearing of the boundary stratum and the consequent braking and diminishing of the landing speed would be attained. This



procedure was later applied to a great extent to the fighter plane Muster Ju. 88 under the name of "dive-brake". This patent had to be handed to the English factory Handley-Page after World War I, which explains that the name of "Handley-Page Splitwing" is more widely known.

However, developments proceeded. It was principally the Aerodynamic Experimental Institute of the Gottingen University, directed by the renowned Professors Prandtl and Betz, and Constructor Flettner, which drew its conclusions from the theory of the airplane-wing-beam. Flettner proved that the conditions of a rotating object are similar to those which appear in a "translatorischen" movement. Thus evolved the "Flettner-Rotor".

Professor Junkers, head of the well known airplane works in Dessau, who in the year 1915 received his pathbreaking patent on the one-piece metal wing without junctures, ordered a research group, which was headed by Professor Dr. Bock, and to which I had the honor to belong, to investigate to what extent the uplift of a wing could be increased through the attachment of a Flettner-Rotor in the shape of a cylinder turning at great speed. The cylinder was two-thirds of the length of the wing and was installed in the nose of the wing, where it could best be adapted to the wing's profile. To assist us with aerodynamic problems, the Gottingen University sent us Professor Prandtl. The experiments turned out to be extremely difficult and involved many casualties. The purely technical question of the speedy uplift of a long cylinder of light construction could not be solved at that time. Inexplicable vibrations and axle breakages occurred time after time which Professor Junkers ordered us to investigate, and with which we were occupied for months. Not less than four men, all experienced and tried pilots of the first World War and outstanding engineers, died in these experiments. It was clear to us that only a gas-turbine could produce the direct uplift of the cylinder. However, since meanwhile more pressing problems awaited solution, experiments with this type of aircraft were interrupted.

Meanwhile the Aerodynamic Experimental Institute of Gottingen made new and enlightening discoveries. Professor Betz found that supersonic speeds, such as are produced by quickly rotating propellers, created entirely new conditions. This investigation, however, needed the furnishing of a wind tunnel for supersonic speeds which could only be built many years later, and which after the war was forwarded to the United States where it greatly amazed all scientists.

Now light was shed on many things. It was found that the tearing of the boundary stratum at supersonic speeds involved much greater resistance, so that an object with full atmospheric pressure practically "hangs" from the upper layer of air, and theoretically experiences there the same uplift as an object of the same surface in the water. The converting of the revelations found in research into reality, however, needed the solution of the starting force through a gas-turbine or another equivalent machine or instrument.

Many heretofore unexplained phenomena now found an explanation. For example it had often been observed that the range of quickly [rapidly] rotating missiles ("Drallwirkung") was much greater than could be explained according to the laws of ballistics. Paradoxical explanations were sought for this such as that the air resistance decreases with growing speeds. Today we know that these quickly rotating missiles "swim" in the surrounding layers of air and therefore lose part of their weight. Full clarification was brought about only with supersonic speeds, which were obtained in the experiments with rockets (V-2) and were arrived at by flights of many hundreds and thousands of kilometers, and which can only be explained by the way in which these missiles literally "hang" in the air. The surprise of the specialized scientists the world over at the astounding results of the German V-2 was not less than that which is produced today by the appearance of the mysterious

from the theory of the airplane-wing-beam. Flettner proved that the conditions of a rotating object are similar to those which appear in a "translatorischen" movement. Thus evolved the "Flettner-Rotor".

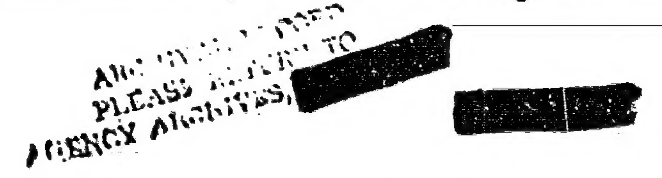
Professor Junkers, head of the well known airplane works in Dessau, who in the year 1915 received his pathbreaking patent on the one-piece metal wing without junctures, ordered a research group, which was headed by Professor Dr. Bock, and to which I had the honor to belong, to investigate to what extent the uplift of a wing could be increased through the attachment of a Flettner-Rotor in the shape of a cylinder turning at great speed. The cylinder was two-thirds of the length of the wing and was installed in the nose of the wing, where it could best be adapted to the wing's profile. To assist us with aerodynamic problems, the Gottingen University sent us Professor Prandtl. The experiments turned out to be extremely difficult and involved many casualties. The purely technical question of the speedy uplift of a long cylinder of light construction could not be solved at that time. Inexplicable vibrations and axle breakages occurred time after time which Professor Junkers ordered us to investigate, and with which we were occupied for months. Not less than four men, all experienced and tried pilots of the first World War and outstanding engineers, died in these experiments. It was clear to us that only a gas-turbine could produce the direct uplift of the cylinder. However, since meanwhile more pressing problems awaited solution, experiments with this type of aircraft were interrupted.

Meanwhile the Aerodynamic Experimental Institute of Gottingen made new and enlightening discoveries. Professor Betz found that supersonic speeds, such as are produced by quickly rotating propellers, created entirely new conditions. This investigation, however, needed the furnishing of a wind tunnel for supersonic speeds which could only be built many years later, and which after the war was forwarded to the United States where it greatly amazed all scientists.

Now light was shed on many things. It was found that the tearing of the boundary stratum at supersonic speeds involved much greater resistance, so that an object with full atmospheric pressure practically "hangs" from the upper layer of air, and theoretically experiences there the same uplift as an object of the same surface in the water. The converting of the revelations found in research into reality, however, needed the solution of the starting force through a gas-turbine or another equivalent machine or instrument.

Many heretofore unexplained phenomena now found an explanation. For example it had often been observed that the range of quickly rapidly rotating missiles ("Drallwirkung") was much greater than could be explained according to the laws of ballistics. Paradoxical explanations were sought for this such as that the air resistance decreases with growing speeds. Today we know that these quickly rotating missiles "swim" in the surrounding layers of air and therefore lose part of their weight. Full clarification was brought about only with supersonic speeds, which were obtained in the experiments with rockets (V-2) and were arrived at by flights of many hundreds and thousands of kilometers, and which can only be explained by the way in which these missiles literally "hang" in the air. The surprise of the specialized scientists the world over at the astounding results of the German V-2 was not less than that which is produced today by the appearance of the mysterious "Flying Discs".

In the same way in which the ingenious discernment of Professor Junkers pointed the way for airplane construction for the whole world, thus also may his idea of attaching Flettner Rotors have a revolutionary effect. Airplanes of this type must have such an enormous carrying capacity as to be practically comparable to amphibious planes of the same size. The lack of uplift produced by the Flettner Rotors can easily be achieved through the oblique position of the entire airplane



[redacted]

with a positive starting angle in connection with the enormously high starting speed. The attaching of speedily rotating tops assures side stability. There is also the possibility of attaching horizontal auxiliary propellers of the helicopter type. And what about the question of the starting force? The safety of such an aircraft stands and falls on the starting force of the cylinders, and only too well do I remember the casualties inflicted by the lack of it. As I mentioned before, only the development of a gas-turbine can bring the solution, since it consists only of rotating parts and works with the dependability of a steam engine.

There is only one more question to be answered: could such an aircraft carry enough fuel for world-wide journeys? This question is easily answered in the affirmative. In the first place such an aircraft has a tremendous carrying capacity, as we have already seen; and in the second place chemical research has made astounding developments in this respect. We know today—quite apart from atomic energy—carriers of energy of unsuspected power and duration. [It should be remembered that the missiles of German anti-tank weapons were coated with chemical substances which melted up to 20 cmts. of steel plates within fractions of a second.] Energy carriers of this type, if applicable to a gas-turbine, should make an action-radius possible which far surpasses that of gasoline engines.

The future will show whether the "Flying Discs" are only the products of imagination or whether they are the results of a far-advanced German science which, possibly, as well as the nearly finished atomic bombs, may have fallen into the hands of the Russians.

only too well do I remember the casualties [illegible] mentioned before, only the development of a gas-turbine can bring the solution, since it consists only of rotating parts and works with the dependability of a steam engine.

There is only one more question to be answered: could such an aircraft carry enough fuel for world-wide journeys? This question is easily answered in the affirmative. In the first place such an aircraft has a tremendous carrying capacity, as we have already seen; and in the second place chemical research has made astounding developments in this respect. We know today—quite apart from atonic energy—carriers of energy of unsuspected power and duration. [It should be remembered that the missiles of German anti-tank weapons were coated with chemical substances which melted up to 20 cmts. of steel plates within fractions of a second.] Energy carriers of this type, if applicable to a gas-turbine, should make an action-radius possible which far surpasses that of gasoline engines.

The future will show whether the "Flying Discs" are only the products of imagination or whether they are the results of a far-advanced German science which, possibly, as well as the nearly finished atomic bombs, may have fallen into the hands of the Russians.

